

CLAIMS

What is claimed is:

1. A method for registering, identifying and processing data related to chemical compounds comprising the steps of:

- (a) entering information on structure and properties of known chemical compounds into a first group of data bases ;
- (b) entering information on genes, including alleles, RNAs and proteins into a second group of data bases;
- (c) entering information on known diseases and on epidemiology into a third group of data bases ;
- (d) entering information on data relating to individual living organisms into a fourth group of data bases;
- (e) entering information on any known links between any of the data contained in any of the first, second, third and forth groups of data bases into a fifth group of data bases;
- (f) developing a tool for mining and visualizing of data; and
- (g) applying the tool for mining and visualizing of data to generate new knowledge on effects of chemical compounds, alleles and gene products on given individual living organisms.

2. The method of claim 1, wherein, in step (a), the chemical compounds include drugs.
3. The method of claim 1, wherein, in step (g), the chemical compounds include drugs.
4. The method of claim 1, wherein, in step (a), the properties include physical, chemical, pharmacokinetic, pharmacodynamic and toxicological properties.
5. The method of claim 1, wherein, in step (b), the information includes pharmacogenetic, toxicogenetic, expression genetic and epigenetic data, splicing, DNA, RNA and protein modification.
6. The method of claim 1, wherein, in step (d), the individual living organisms include human beings.
7. The method of claim 1, wherein, in step (g), the individual living organisms include human beings.
8. The method of claim 1, wherein, in step (g), wherein the mining of data includes editing, importing, annotating, arranging and visualization of information as well as path-finding, neighbor-finding, similarity searches and machine learning.
9. The method of claim 1, wherein, in step (g), the knowledge on effects of chemical compounds on given individual living organisms includes
 - prediction of adverse drug reactions;

- prediction of at least one specific drug suitable for therapy in a given individual living organism;
- prediction of at least one specific chemical compound to which exposure of a given individual living organism should be avoided;
- prediction of possible new drug candidates suitable for treating one of a given disease and condition; and
- identification of one of molecules and molecular domains occurring in a given individual living organism as targets for drugs.